completed, the geographical position of every city in Southern America will be known with exactitude.

THE Annual Meeting of the Dutch Geographical Society took place at Delft on October 27, when interesting communications were made by the president regarding the exploring expedition sent to Sumatra by the Society. The explorers report having passed through a number of districts which had never been visited before by Europeans, but through the resistance offered by one of the native chieftains, the expedition has now unfortunately been discontinued, and most of its members are on their way back to Holland.

IT is stated that the Russian Minister of Communications will shortly send a special expedition to the Amu Darya district, to describe the new waterway formed by the overflow of that river.

THE *New York Herald* publishes a complete list of positions on the Amazon and Madeira rivers which have been determined by the United States Survey Expedition in the corvette *Enterprise*, Commander Selfridge. They are ninety-two in number. The survey has demonstrated that it is possible for vessels drawing sixteen feet of water to pass during nine months of the year, and by careful navigation during the whole year, up to St. Antonio, on the Madeira. The river is always practicable for vessels drawing only eight feet. The Upper Madeira is not safely navigable except between December and July. Every evening the officers specially charged with the duty landed and ascertained the latitude and longitude of the halting-place, with reference also to its bearings with respect to certain conspicuous stars north and south, east and west. Six careful sets of observations, at intervals, were made to determine the rate of the chronometer. The charts compiled are to be reduced and published at Washington.

NOTES

WE take the following from the *Times*:—At the meeting of the Council of the Royal Society on Thursday last, the following were nominated as council and officers for the year ensuing to be proposed for election at the anniversary meeting of the Society, which will be held on St. Andrew's Day, the 30th instant:—President, William Spottiswoode, M.A., LL.D.; Treasurer, John Evans, F.G.S., V.P.S.A.; Secretaries, Prof. George Gabriel Stokes, M.A., D.C.L., LL.D., and Prof. Thomas Henry Huxley, LL.D.; Foreign Secretary, Prof. Alexander William Williamson, Ph.D. Other Members of the Council—Frederick A. Abel, C.B., V.P.C.S., William Bowman, F.R.C.S., William Carruthers, F.L.S., Major-Gen. Henry Clerk, R.A., William Crookes, V.P.C.S., Sir William Robert Grove, M.A., Augustus G. Vernon Harcourt, F.C.S., Sir Joseph Dalton Hooker, C.B., K.C.S.I., D.C.L., Vice-Admiral Sir Astley Cooper Key, K.C.B., Lieut.-Gen. Sir Henry Lefroy, C.B., Lord Lindsay, P.R.A.S., Sir John Lubbock, V.P.L.S, Lord Rayleigh, M.A., Charles William Siemens, D.C.L., John Simon, C.B., D.C.L., Prof. Allen Thomson, M.D., F.R.S.E. It will be remarked that Sir Joseph Hooker has carried out his intention of retiring from the presidency.

PROF. WÜRTZ delivered his Faraday Lecture on Tuesday evening at the Royal Institution, and was entertained at dinner last night at Willis's Rooms. We hope next week to give a full account of the proceedings on both occasions.

PROF. GYLDÉN, Director of the Stockholm Observatory, has received the Cöthenius Medal of the German Leopold-Caroline Society of Science, for his important researches in astronomy.

WE understand that, at a meeting of the Professors of Queen's College, Cork, it was resolved to erect a memorial to the late Prof. Harkness, in the form of a stained glass window, in the Examination Hall of the College. It is understood that the friends of the late professor in that city and elsewhere will be invited to co-operate in raising the funds necessary for this purpose.

DR. O. FINSCH, the well-known Bremen naturalist, is about to start on a scientific tour to the Polynesian Seas; the expenses of the tour will be defrayed by the Berlin Humboldt Institution, and Dr. Finsch travels at the special request of the Berlin Academy of Sciences.

OUR Paris correspondent writes that the Werdermann electric light has attracted much attention there, and will very shortly be tried at the office of the *Temps*. The Jablochkoff light is still in operation at the Avenue de l'Opéra, but will be stopped at the end of this month, unless a new arrangement as to cost can be come to. Indeed, our correspondent informs us, unless the present price of this light is considerably modified, it is not likely to keep its place.

AMONG the latest news about the progress of electric lighting is an account of an interview with Mr. Edison, given in the *New York Sun*. His Electric Light Company proposes to light the public buildings and private residences of New York with electric lights. The electricity would be made by twenty or more engines, stationed in different parts of the city. Each station would have an engine and several electric generating agencies. He thinks that the engines will be powerful enough to furnish light to all houses within a circle of half a mile. He passes the wires right through the gas-pipes, and brings them into the houses. "All that will be necessary will be to remove the gas burners, and substitute electric burners. The light can be regulated by a screw the same as gas. He does not pretend that it will give a much better light than gas, but it will be whiter and steadier than any known light; nor does he know now that it will be cheaper than gas. To the question as to whether he could measure the amount of electricity used, Mr. Edison said he had made no attempt to discover a meter. "I know that it can be measured, but it may take some to find out how. I propose that a man pay so much for so many burners whether he uses them or not. If I find that this works an injustice why I shall try to get up a meter, but I fear it will be very hard to do it." Mr. Edison says, according to the *Sun*, that "electric generating machines could be placed upon steamboats and locomotives, and the boats and cars lighted by the action of the engines, but the instant that the machinery stopped the lights would go out." Country towns, with the use of the electric generating machines, could be lighted by water power. Any power could be used provided it was strong enough to turn the shaft of the machine with the necessary rapidity. In an article on the subject of Electric Lighting in yesterday's *Times* an account is given of an exhibition of a new electric light by the Electro-Dynamic Light Company of New York on the 29th ult. It is described as a very simple affair, consisting of a small pencil of carbon a little larger than an ordinary pin, connected by wires with an electric machine, and inclosed in a hermetically sealed glass globe, which is filled with pure nitrogen gas. The pencil of carbon is heated by the electric current to a temperature of from 30,000° to 50,000° Fahrenheit. In an atmosphere with which it cannot chemically combine the carbon is practically indestructible, and the light is therefore produced without any consumption of material. In the experiments made five lights were placed in different parts of the darkened room, and all were connected by wires with a small electric machine. In an adjoining room a simple key was placed in one of the three ordinary keyholes in one of the walls and turned a little. Two of the burners attached to a hanging chandelier in the centre of the room immediately glowed faintly, and as the key was turned still further around the glow increased until a brilliant and perfectly steady white light was obtained, equal to the light of twelve ordinary gas jets. The key was then turned to another of the keyholes, and another of the lamps was lighted up. In the same way the fourth and fifth burners were ignited, and there resulted an exceedingly brilliant white light, yet so soft and steady that it did not pain the eyes. The lights were easily turned to any desired degree of brilliancy —from that of a mere spark to a light of six times the intensity of the common gas jet, that being the *maximum* power of the lights in use. The company asserts its ability to easily fit up lights equal to thirty gas-burners. By a very simple "switch" in the wall the current of electricity is divided and subdivided to supply any number of burners desired, the electricity reaching the switch from the generator through a single wire. The light is turned on or off or regulated to any degree merely by turning a key which operates upon the switch. The plan is similar to that proposed by Edison. The difficulty of a meter has been overcome by the invention of a meter which will record the number of burners used in any given house and the number of hours each burner is lighted.

The Institution of Civil Engineers have, as usual, issued a circular inviting communications on a number of subjects connected with their department; for such as meet with their approval they award several valuable prizes. The circular may be obtained by applying to 25, Great George Street, Westminster.

Prof. S. P. Thompson lectured to an audience of 2,600 persons in the Colston Hall, Bristol, on November 8, on the Electric Light. The Jablochkoff candle and Wallace lamp were amongst the systems shown in operation. The lecture is to be repeated on the 13th inst. to the working-men of Bristol.

We are glad to notice a little work which is being done at Winchester, and which deserves commendation as a step in the right direction by a corporation. Mr. P. S. Abraham, M.A., B.Sc., who has for two months been engaged in naming, arranging, and cataloguing the different objects in the Winchester City Museum, has sent in a report to the Committee, from which we glean the following:—The zoological portion of the museum contains some 1,700 objects, which have been labelled and placed in their proper scientific positions by Mr. Abraham. This number is made up of 70 mammalian animals, 430 birds, 50 reptiles and frogs, 80 fishes, 50 specimens of corals, sponges, &c., and about 1,000 molluscs. There are, in addition, a few specimens of articulated animals, and a small cabinet of insects. There is also a valuable collection of lichens—many from Hampshire—and comprising 227 varieties. In the mineralogical room Mr. Abraham has classified, labelled, and arranged two large cases of minerals, which now contain above 1,200 specimens, one case of rocks, with 300 specimens, and two cases of fossils containing nearly 1,300 specimens. There are, besides, large and valuable collections in various other departments, though Mr. Abraham states they are very insecurely cased. We hope the Corporation will adopt his recommendations. He observes that the museum contains an excellent nucleus of specimens. The collection could be easily improved and enlarged by a judicious curator, by the exchange of duplicate specimens, of which there are many, and by filling up gaps by purchase of the wanting representative forms. In this manner, and without very great expense, the museum might be made well worthy of the city of Winchester. The Committee conveyed to Mr. Abraham their "unanimous expression of approval at the able manner in which he has arranged, labelled, and catalogued the collection in the City Museum."

Violent volcanic eruptions are reported from several of the Aleutian Isles in the North Pacific. The news was brought to Honolulu by whalers returning from the Arctic Seas through Behring's Straits. The high volcanoes upon Amukta and Tshegula sent forth gigantic columns of smoke and copious streams of lava, and the same was the case with the mountain upon Umnak, which reaches a height of 2,800 metres. On the island of Unalashka an earthquake accompanied by a tidal wave totally destroyed the village of Makushin on August 29.

A large sea- and fresh-water aquarium is now in course of construction at Leipzig. It will consist of about twenty tanks, of which nine are to contain marine animals. The capacity of the tanks will vary from 350 to 800 litres.

Remarkable discoveries of Roman structures have recently been made at Bonn, on the Rhine. It has been found that the Castrum the Romans had established there by far exceeded in extent and importance the celebrated Saalburg near Homburg. Unfortunately the directors of the Provincial Museum of Bonn, by whose orders the excavations were begun, were not able to acquire the ground upon which the discovery was made, so that archæologists must remain satisfied with the mere fact of the discovery and the measurements taken.

Near the Norwegian town of Hamar, at a farm called Storhammer, some 170 silver coins have been found in the ground, none of which are dated later than the year 1530. They are all of Danish, Swedish, or Norwegian origin. At the same time two silver spoons, a gold ring, and several small silver hooks, were found. All the objects have been purchased by the Christiania Museum.

In 1880 there will be an international exhibition of sea and river fishing-tackle at Berlin. The programme of the exhibition, which will contain no less than nine subdivisions, will shortly be sent to all interested in fisheries, both in Germany and abroad.

From the twenty-second annual report of the Sheffield Free Libraries and Museum we are glad to see that in the reference department a large increase has taken place in the demand for books in the class of arts and science. Considerable additions have been made to the museum.

The *Natural History Journal*, "conducted by the Societies in Friends' Schools," for October 15 contains several interesting papers on various scientific subjects. A new feature is the illustrations, which have been made by an ingenious, simple, and inexpensive process, described in the first paper. One of these, "Societies in Friends' Schools," is the Lisburn School Association, which sends us a very favourable "Fourth Annual Report." We have also received a creditable Annual Report (the eleventh) from the Metropolitan Scientific Association, which meets at the Ward Schools, Aldersgate Street, on the fourth Tuesday in each month.

We have received a well-arranged list of lectures to be given in connection with the Hull Literary and Philosophical Society, in which scientific subjects are given a large place.

The *Gardener's Chronicle* publishes the following abstract from a letter recently received from Dr. Beccari, from Sumatra:—"I have very little time to spare, only to tell you of a botanical discovery which I think is of some interest. It is a gigantic Aroid, which can only be compared with the Godwinia discovered by Seemann in Nicaragua. I have no books with me, and I am not able to ascertain the genus to which it belongs, especially as I have seen it only in fruit. I believe it to be a Conophallus, and if so, I propose to name it *Conophallus titanum*. The tuber of a plant that I dug up is 1·40 m. in circumference. Two men could hardly carry it; they fell down and the tuber was broken. I will secure some more, and I hope to be able to forward them to Florence in good state. Meanwhile I send you some seeds. From this tuber, as in the genus Amorphophallus, only one leaf is produced, which in form and segments does not much differ from those of the above-named genus. But what different dimensions! The stalk at the base was 90 ctm. in girth, it was slightly attenuated at the apex, and reached the height of 3·50 m.; its surface was smooth, of a green colour, with numerous small, nearly orbicular dots, of a white colour. The three branches into which it was divided at the top were each as large as a man's thigh, and were divided several times, forming altogether a frond not less than 3·10 m. long. The whole leaf covered an area of 15 m. in circumference. The spadix of a plant that I found in fruit had the dimensions of the stalk already described; the fruit-bearing portion was cylindrical, 75 ctm. in girth, 50 ctm. long, and was densely covered with olive-shaped fruits 35–40 mm. long and 35 mm. in diameter, of a bright red colour, each containing two seeds." This letter was addressed to the Marquis B. Corsi-Salviati, who received at the same time a number of seeds of this gigantic novelty. Many of them have germinated, so that the species is secured to European collections.

THE Giffard great captive balloon was disinflated last week without accident. The following statistics in connection with the enterprise may be interesting. The Tuileries grounds were opened to the public during 100 days, but the balloon was unable to work owing to the state of the atmosphere during 30 days. The number of ascents was 1,023, the number of passengers 34,000. The number of pioneer balloons sent up 25. During this period the sum of 840,000 francs was collected. The expenses of building the balloons, of machinery, and working, reached about 500,000 francs, so that the enterprise was a financial success.

THE *Daily News* Quebec correspondent telegraphs as follows:—"After long study and many experiments Prof. Bell has made an important discovery in connection with the telephone. It is well known that the telephone has been a comparative failure in England on account of the fatal induction generated by the contiguity of other wires. Prof. Bell has discovered simple and efficacious means whereby not only is induction prevented, but the clearness and force of the telephonic vocalisation greatly increased. Prof. Bell tells me that practical demonstration of the importance of the discovery will be given in London as soon as the necessary preliminaries are complete." We give this statement as published in the *Daily News*, though it must be received with some caution.

A NATIVE Japanese paper states that besides the two docks already existing at Yokoska, a third is to be built which will accommodate the largest ships on the Pacific. It is expected that it will be completed within three years, and the probable cost will be about 55,000*l*.

FROM Stuttgart (E. Schweizerbart'sche Verlagsbuchhandlung) is announced a second collected edition of Mr. Darwin's works in twelve volumes, with 326 woodcuts, seven photographs, twelve charts and tables, and a portrait of the author on copper-plate.

THE publishing house of Hartleben, in Vienna, to mark the seventy-fifth year of its existence, have issued a neatly-printed catalogue of all the works issued by them from 1803 to the present year. A very large proportion of these belong to the various departments of science. The catalogue contains a portrait of the founder of the house, and a sketch of its history.

FROM Mr. Murton's annual report on the Botanical and Zoological Gardens at Singapore we learn that, both botanically and zoologically, the Gardens are in a flourishing state. One of the most important sections of the garden, namely, that devoted to the cultivation of economic plants, continues to receive a large share of attention, patches of Liberian, Cape Coast, and Arabian coffee have been planted, as well as cocoa, China and Assam tea, and ipecacuanha. *Castilloa elastica* and *Manihot Glaziovii*, both valuable rubber, or caoutchouc yielding plants, natives of South America, as well as the Sarsaparilla, Alligator pear (*Persea gratissima*), New Zealand Flax (*Phormium tenax*), Cubeb (*Piper Cubeba*), Camphor (*Camphora officinarum*), Allspice (*Eugenia Pimenta*), and many others, have been introduced. The Liberian coffee plants, sent to Larut in 1875, are reported to be making good growth with large healthy foliage, forming a great contrast to the Arabian coffee growing beside it. The Salt Bush, which is referred to two species of *Rhagodia*, namely, *R. hastata* and *R. parabolica*, has been introduced into Singapore. Both species are described as possessing wholesome and nutritious qualities, and are much relished by stock. The cultivation of the plants is said to be very easy, and in consequence of the rapidity with which, when protected from stock, they grow into large and handsome shrubs, together with their capability of resisting both heat and drought, are strongly recommended for cultivation. Besides the use as fodder, in a fresh state, the plants might also be advantageously given to sheep and cattle after being cut and dried, or in conjunction with other foods. In Singapore the plants seem better able to resist heat and drought than prolonged wet weather, but it is anticipated that, when they become well established, they will survive the effects of wet weather better. Mr. Murton states that the object that will be kept steadily in view in the working of the new economic garden is the introduction of new plants of economic value, and thoroughly testing their capabilities of production in Singapore before recommending them for general cultivation, while it will also afford an opportunity to intending planters in the Malay Peninsula of seeing the various plants adapted for their cultivation, and the amount of success, or otherwise, attending each operation. In the Zoological department little change has been affected to call for note.

THE additions to the Zoological Society's Gardens during the past week include two Arabian Baboons (*Cynocephalus hamadryas*), from Arabia, presented by Mr. C. Wood; two Squirrel-like Phalangers (*Belideus sciureus*) from Australia, presented by Mr. E. S. Waller; two Hooded Crows (*Corvus cornix*), European, presented by Capt. F. H. Salvin; a Burchell's Zebra (*Equus burchelli*) from South Africa, a Yellow-Shouldered Amazon (*Chrysotes ochroptera*), a Blue and Yellow Macaw (*Ara macaco*) from South America, a Dalmatian Dog (*Canis familiaris*), a Passerine Owl (*Glaucidium passerinum*); two Variegated Sheldrakes (*Tadorna variegata*) from New Zealand, six Summer Ducks (*Aix sponsa*) from North America, two Scarlet Tanagers (*Ramphocœlus brasiliensis*) from Brazil, two Grenadier Weaver Birds (*Euplectes onyx*) from West Africa, two Java Sparrows (*Padda oryzivora*) from Java, two Domestic Fowls (*Gallus domesticus*) from Japan, deposited; a Nisnas Monkey (*Cercopithecus pyrrhonotus*) from Nubia, a Red-Fronted Lemur (*Lemur rufifrons*) from Madagascar, a Mantchurian Deer (*Cervus mantchuricus*) from Japan, an American Tantalus (*Tantalus loculator*) from South America, purchased.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE

AN influential meeting was held last week in Liverpool to consider the report of a committee appointed at a previous meeting to draw up a scheme for the establishment of a college for higher education in Liverpool. The committee have arrived at the following conclusion: that the most appropriate name will be "University College, Liverpool," unless the name of a founder or large benefactor be adopted. The smallest staff consistent with the objects should be composed of at least seven professors and two lecturers, allotted as follows:—Professorships—Mathematics and experimental physics; classical literature and history; engineering, practical mechanics, and steam; logic, mental and moral philosophy, and political economy; modern literature and history; chemistry, natural history (including botany, zoology, and geology). Lectureships—Jurisprudence and law; physiology. The stipend of each professor should be reckoned at 300*l*. per annum (exclusive of a share of